
**International Trade In
The San Bernardino Region:
Transportation, Trends, and Employment**

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EXECUTIVE SUMMARY

International trade presents significant employment, growth, and revenue opportunities for the San Bernardino region, which encompasses San Bernardino County and several cities in Riverside County and is located to the immediate east of Los Angeles County. Proximity to the San Pedro Bay Port complex (which includes the Ports of Los Angeles and Long Beach) and access to a transportation and logistics network expanding out across the U.S., makes the San Bernardino region a prime location for companies participating in international trade activity. The purpose of this report is to quantify trade activity in the region, while also estimating the employment generated by international trade. The California Policy Institute at Claremont's (CPIC) analysis indicates that current trade activity and likely trade growth present a valuable opportunity for job creation and economic development in the San Bernardino region.

TRANSPORTATION NETWORKS: SAN BERNARDINO AS A TRADE GATEWAY

Given San Bernardino region's relative proximity to the San Pedro Bay Port Complex, as well as major airports including LA/Ontario International Airport (ONT), the area is an advantageous location for companies active in international trade. Key findings with respect to infrastructure include:

- Interstate 10 and State Highways 60, 91, and 210 provide the necessary linkages between the San Bernardino region and major Southern California ports.
- After goods reach the San Bernardino region, access to Interstates 10, 15 and 40 allow movement of international trade into the majority of major markets in the U.S. For instance, Phoenix, Las Vegas, San Antonio, Memphis, and Raleigh-Durham are within two exchanges on interstate freeways from the San Bernardino region.
- The San Bernardino region is located at a rail nexus, with lines moving goods East, West, North, and South. Southern California is connected to vast markets by two principle long-haul railroads: The Burlington Northern Santa Fe Railway and Union Pacific Railroad. Combined, these two companies move more intermodal cargo than any other rail system in the world (Jones and Stokes 2004).

INTERNATIONAL TRADE STATISTICS AND TRENDS

In order to quantify international trade at the sub-national level, the California Policy Institute at Claremont Graduate University (CPIC) acquired data from the Port Import Export Reporting Service (PIERS). Before presenting CPIC's findings, it important to note that the PIERS data does not capture the impact of trade in services on the local economy. The data necessary to estimate impact on services does not currently exist at the local level. All the statistical information presented in this study refers to merchandise trade (for detailed information on how PIERS data is collected, see "Annex 1: Extended Explanation of Methodology," VI-1)

With this caveat in mind, the key findings from the data analysis include:

- Total international merchandise trade in San Bernardino and Riverside counties amounted to \$17.5 billion in 2005 or close to 18.5% of aggregate income. San Bernardino County was responsible for the vast majority of regional international trade, with \$14.9 billion in imports and \$917 million in exports.
- Recent figures show a marked reduction in regional trade activity between 2002 and 2004, followed by a drastic increase in trade activity in 2005—total trade nearly tripled between 2004 and 2005. Total trade values are at record levels and are determined almost entirely by year-to-year changes in imports.
- Total import activity more than doubled from 2002 to 2005, while exports maintained a growth rate 10.4% over the period. Healthy import and export growth over the four year period is encouraging, and may suggest that Inland companies are taking advantage of international economic opportunities.
- Inland import commodities consist primarily of intermediate and consumer goods. Machinery parts topped the list in 2005, with an estimated value of \$1.5 billion or 11.4% of overall imports. Merchandise in this category primarily consisted of items such as computer parts and cables, as well as various other office-related components. Other significant import commodities included iron and steel (\$1.6 billion), electronics (\$1.1 billion), medical or surgical instruments (\$1.1 billion), and furniture (\$1.1 billion).
- The region's top export commodities are dominated by raw materials, including scrap metal (\$196 million) and raw fabrics (\$171 million). These two raw materials alone represented close to 48.5% of the value of all commodities exported in 2005. Other significant export commodities included vehicle parts (\$66 million), articles of plastic (\$45 million), and medical or surgical instruments (\$40 million).
- Seven out of the region's top 10 trading partners are located in Asia or the South Pacific, representing 84.1% of all vessel trade or \$12 billion. China alone represents just over 50% of total trade activity in the region or \$7.1 billion, making it the region's most important trading partner in terms of both imports and exports in 2005.
- Taiwan and Japan also recorded impressive trade numbers, with both countries providing over a billion dollars of international trade.

INTERNATIONAL TRADE AND SOUTHERN CALIFORNIA PORTS

Given the San Bernardino region's geographic location, it is not surprising that the Ports of Los Angeles and Long Beach are the most important trade hubs for inland vessel trade. Moreover, Inland airports contribute to regional trade movements, providing companies located in the San Bernardino region with opportunities to move high value products. CPIC's key findings with respect to trade and regional ports include:

- Over 2.4 million tons of trade merchandise flowed through the Port of Los Angeles with the San Bernardino region as its destination, while over 1.7 million flowed through the Port of Long Beach. These figures show that the two Southern California ports are far and away the most important trading hub for vessel trade in the region—the closest port competitor (the Port of San Diego) only provided 617,000 tons.
- From 2004 to 2005, import growth at the San Pedro Ports more than doubled, while exports grew at a rate of 2.5%. The primary factor leading to double digit import growth was a consid-

erable reduction in the port congestion that impacted the San Pedro Ports over the past two years (Kyser and Huang 2005).

- Total international air cargo trade at the LA/Ontario International Airport (ONT) increased by 75.6% from 2004 to 2005, with imports increasing by 29.5% and exports increasing by 109.3%. It is important to keep in mind that air cargo tends to consist of high value/low weight high-tech goods and thus contributes more to the regional economy than suggested by its modal share of weight.
- According to recent Southern California Association of Governments (SCAG) forecasts, ONT is expected to reach close to 2.25 million tons of total trade by 2030, which is just below estimates for Los Angeles International Airport (LAX) (SCAG 2004).
- Several other Inland airports are expected to record significant growth over the next several decades. These airports include San Bernardino International Airport, March Air Reserve Base, and the Southern California Logistics Airport. Both San Bernardino International and March Air Reserve are projected to have upward of a million tons of air cargo movement by 2030 (SCAG 2004).

INTERNATIONAL TRADE AND EMPLOYMENT

International trade contributes to regional employment and facilitates economic development. Before presenting CPIC's findings, it is important to note an important limitation of the employment estimates provided in this report. These estimates do not include multiplier effects—i.e., the coefficients used to produce the estimates show the impacts of all the purchases of inputs for production, but fail to include the impact of spending for consumer goods by those individuals earning income from producing goods. For more information on the methodology used to produce the estimates, see “Annex 1: Extended Explanation of Methodology” on page VT-1.

With this limitation in mind, findings with respect to trade and employment include:

- Two-county employment related to the production of international merchandise in 2005 was just over 50,000. Of the total jobs generated, 46,000 (or 90%) are located in San Bernardino County. Close to 24,000 trade-related jobs have an average annual salary of \$35,000 or more.
- Trade-related employment generated close to \$1.6 billion in aggregate income for San Bernardino County (which represents approximately 4% the County's overall aggregate income) and \$166 million in income for Riverside County in 2005.
- International trade is critical to the economic viability of certain local industries. International trade was responsible for approximately 38% of all employment in the wholesale trade industry and 25% of all employment in the retail trade industry in San Bernardino County.
- The majority of employment generated by international trade is due to import activity. Because a majority of international merchandise transitions through the San Bernardino region, employment is generated regardless of whether local firms are importing or exporting. The results of CPIC's analysis indicates that the stigma surrounding trade imbalances is inappropriate in the San Bernardino context.

INTERNATIONAL TRADE AND ECONOMIC DEVELOPMENT

The employment figures in this report provide a good picture of regional development and growth. Findings with respect to trade's impact on economic development include:

- Based on the employment calculations in this report, it is clear that international trade is impacting regional economic development. The employment associated with international merchandise production alone accounted for approximately 7.2% of San Bernardino County's overall employment in 2005.
- Many of the jobs associated with international trade pay high average wages and have few formal education requirements. The culmination of this information suggests that international trade could offer economic opportunities to a large portion of San Bernardino residents (for a similar argument, see Husing 2005).
- These data suggests that international trade has the potential to have long-term and beneficial effects on the economic development of the San Bernardino region. Literature on economic development, job creation, and business attraction suggests that a cluster of businesses engaged in international trade, along with the relatively unique advantages of the area, will provide leverage for the area when bargaining with businesses (Held 2005; Porter 2000; Steinacker 2002).

THE FUTURE OF INTERNATIONAL TRADE ACTIVITY IN THE REGION

It is clear from the statistical information presented in this report that international trade presents a valuable opportunity for the San Bernardino region. Relative closeness to the Ports of Los Angeles and Long Beach, access to a logistics and infrastructure nexus, a growing population, and a strong base of industries that support international trade combine to provide the region with a competitive advantage few other regions in the world possess.

Ensuring that the region's potential for international trade activity is realized will not be easy. Projects to improve goods movement in the San Bernardino region must be recognized as critical to the regions economic development goals and funded appropriately. Specifically, Public officials and local businesses must work together to secure resources to ensure that the region's transportation infrastructure keeps pace with trade growth. If appropriate funding is maintained, the San Bernardino region has the potential to become one of the U.S.' major trade gateways, linking the nation to the rest of the world.

INFRASTRUCTURE AND LOGISTICS

The San Bernardino region possesses unique and profitable traits that allow the area to capitalize on the international trade market. The following section outlines the transportation infrastructure (including interstates, highways, rail lines, and airports) that the area is able to access. In addition, this section demonstrates the markets that the San Bernardino region connects to through this infrastructure, and ease of access from the area.

Introduction:

Over the past decade, international trade has become an important part of the economic lives of residents in major metropolitan areas, as well as residents in small and medium size cities. This report examines the growing importance of international trade for one region located in Southern California: the San Bernardino region, located to the east of Los Angeles County. Is the San Bernardino region well-suited for international trade activity? What is the current state of international trade in the region? What impact does trade have on economic development? This report addresses these and other questions using both qualitative and quantitative analysis.

The report proceeds as follows: the first section provides an overview of the transportation and logistics infrastructure available to businesses conducting international trade in the region. In the opinion of the California Policy Institute at Claremont (CPIC), the region's transportation infrastructure and the ability to reach multiple U.S. markets provide San Bernardino companies with a unique advantage in the area of trade. The second section quantifies international trade activity at the regional level using detailed data from the Port Import Export Reporting Service (PIERS). This dataset allows CPIC to do what few other researchers are able to do: accurately portray international trade activity and trends at a local level. This section not only provides overall information on trade levels and trends, but also details the region's primary trading ports, top trade commodities, and primary trading partners. Lastly, while overall trade statistics present potentially valuable information, the final section of this report examines the question—what do increased imports and exports mean for local communities and residents? To examine this question, CPIC estimates the employment generated from international trade in 2005.

CPIC's analysis indicates that current trade activity and the potential for trade growth present a resource and opportunity for the San Bernardino region in terms of employment growth and economic development. It is essential to the realization of this opportunity that local businesses and public officials recognize the growth potential provided by international trade.

General Location Information:

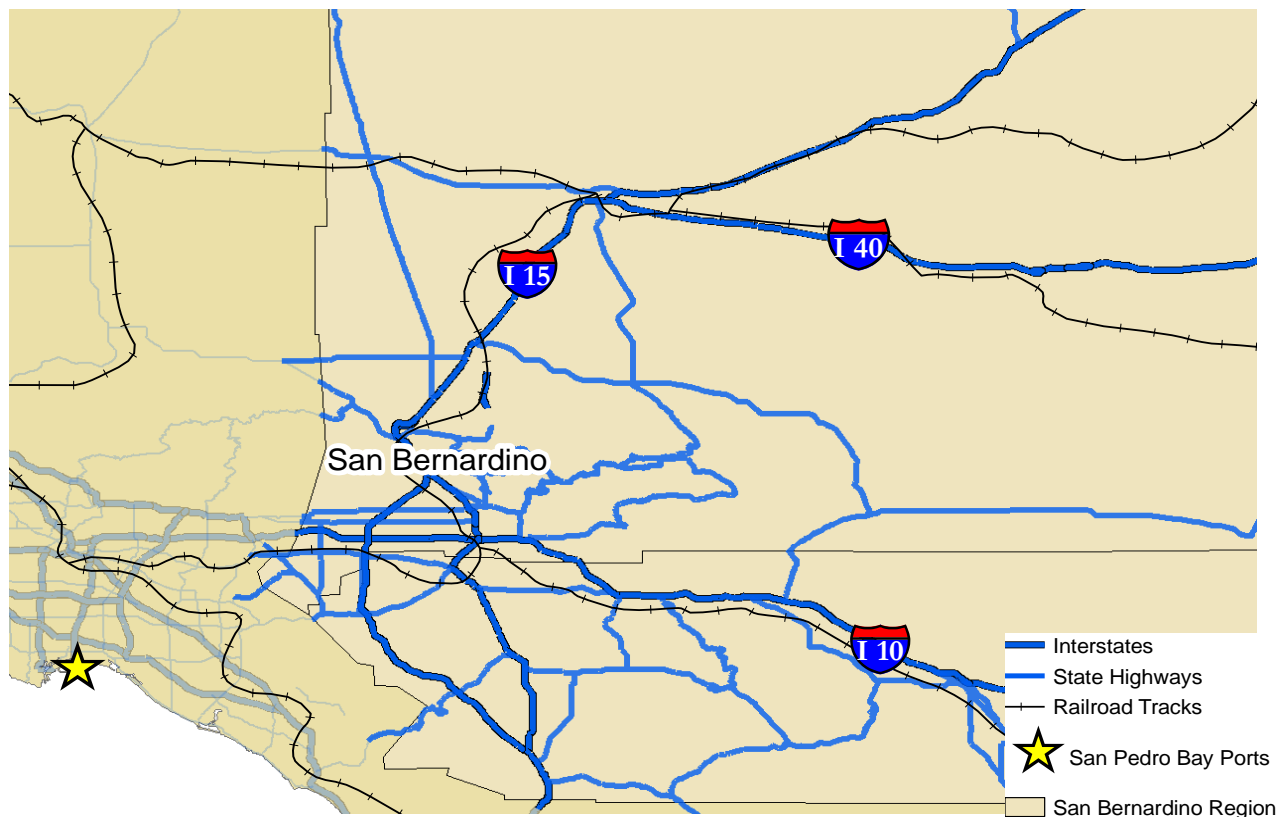
The San Bernardino region, which consists of San Bernardino County and several cities in Riverside County, has unique characteristics that allow the region to take advantage of international trade activity and an increasingly global economy.

Freeway Infrastructure:

A central advantage of the San Bernardino region is the ability to utilize much of the major logistical framework of Southern California. The Los Angeles/Long Beach Port area (also referred to as the San Pedro Bay Ports) sees a significant share of the international trade portage activity in the U.S. All the goods that move through these ports must either be consumed in the immediate area, or exit the area through the logistics framework available. Given the geographic location of the San Bernardino region, many of these goods flow through the area to reach their final destination.

An examination of the Los Angeles area infrastructure indicates that, besides Interstate 5, most goods entering the Los Angeles area must pass through the San Bernardino region. Moreover, the infrastructure in the area has significant advantages over alternate routes. Interstates 10 and 15, along with major railways and local airports, provide the region with access to the U.S., North America, and countries world-wide. The most accessible transportation infrastructure in the area is the interstate system and the state highway system. The San Bernardino region has access to three major interstates and multiple state highways. Figure II-1 shows the area's access to various major interstate freeways and state highways. The transportation infrastructure shown in Figure II-1 connects the San Bernardino region with major markets across the U.S. Figure II-2 shows the markets that companies in the San Bernardino region can access with two or fewer interchanges on major interstate freeways. This map demonstrates that the San Bernardino region has fairly easy interstate access to every major market in the U.S.

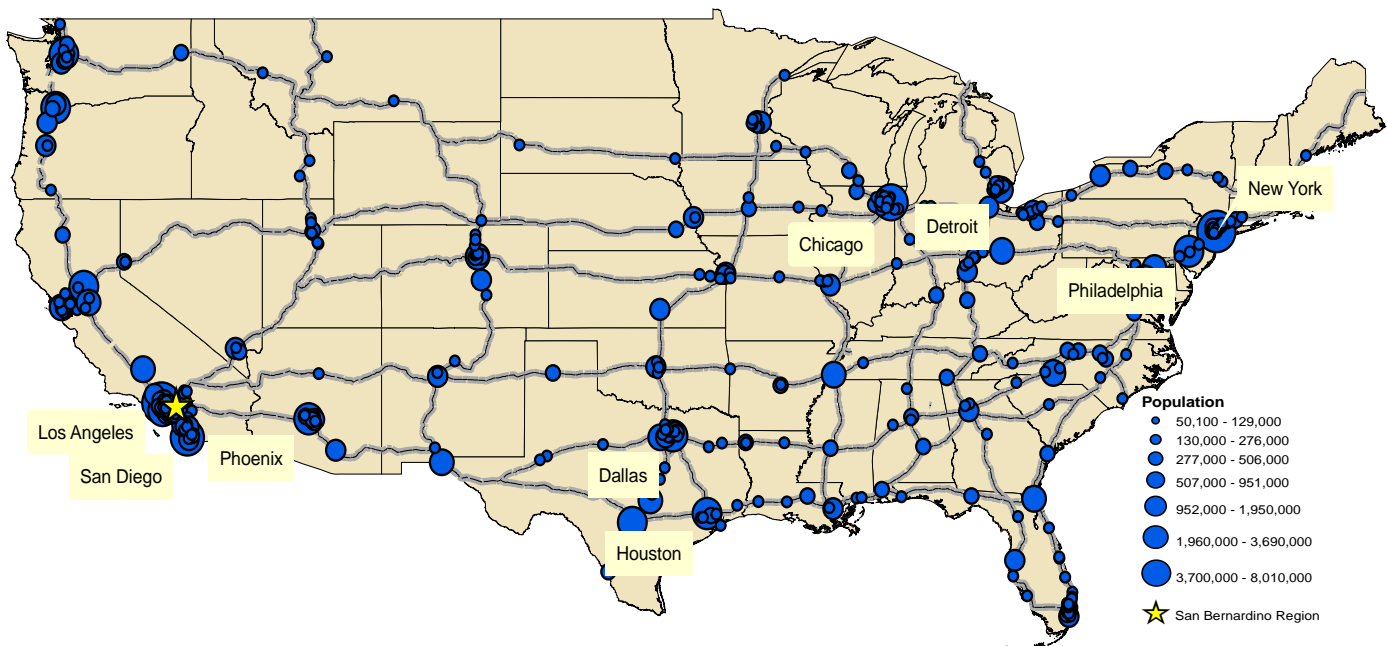
Figure II-1: Interstates and State Highways



Source: National Atlas Maps

Interstate 10 and State Highways 60, 91, and 210 provide links to the Ports of Los Angeles and Long Beach, while Interstate 15 connects the region to San Diego in the south and Las Vegas in the north. In addition, Interstate 15 leads to Salt Lake City, and, more importantly, to Interstates 40, 70, 80, and 90. Interstate 10 expands the San Bernardino region's connection east, as it runs through Phoenix, Tempe, Tucson, El Paso, San Antonio, Baton Rouge, New Orleans, Mobile, Pensacola, Tallahassee, and Jacksonville, Fl. Interstate 40, which crosses north San Bernardino County, transects the middle of the country, accessing markets in Albuquerque, Oklahoma City, Memphis, Nashville, and Raleigh-Durham, among others. Through these interchanges, the San Bernardino region is connected to the majority of the nation.

Figure II-2: Major Markets Connected to San Bernardino Region



Description: This map indicates all cities with a population over 50,000 that can be accessed through two or fewer interstate exchanges. Points are in proportion to the size of the population in each city.

Source: National Atlas Maps

Railway Infrastructure:

In addition to the connections established by the Interstate system, the San Bernardino region is located at a rail nexus, with lines moving goods east, west, north, and south. The Burlington Northern Santa Fe Railway and Union Pacific Railroad combine to move more intermodal cargo than any other rail system in the world (Jones and Stokes 2004). The Burlington Northern Santa Fe Railway's mainline runs from Los Angeles through Orange County to Western Riverside County to San Bernardino. The Burlington National Santa Fe Railway line then connects east through Needles to the Southwestern states.

Figure II-3: Rail Systems in the San Bernardino Region



Source: National Atlas Maps

In addition to the Burlington National line, the Union Pacific Railroad operates four lines of rail in Southern California, two of which traverse the San Bernardino region on their way east. Short-haul lines, intermodal rail yards, and cross decks combine with these long haul lines to provide a complete rail system for the San Bernardino region.

In addition, when moving goods by rail, the San Bernardino region possesses a distinct advantage over other Southern California locations, as companies are able to bypass much of the rail congestion that occurs in the Los Angeles area. This allows warehouses and distributors to move their goods more quickly into major markets in the U.S. Figure II-3 illustrates the myriad of rail lines available in the San Bernardino region. Few other areas in the country are so poised to capture, move, and exchange goods leaving and entering the country.

Ports of Los Angeles and Long Beach:

The San Bernardino region is also advantaged by a close spatial relationship to the Ports of Los Angeles and Long Beach. A close location to the San Pedro Bay ports provides many advantages for the San Bernardino region, including a large capacity, access to Asian markets, and the dominance of the Southern California port network. For more information on the high volume of imports and exports that the San Bernardino region handles from the Ports of the Los Angeles and Long Beach, versus other West Coast ports, please see section 4.2 on page IV-6.

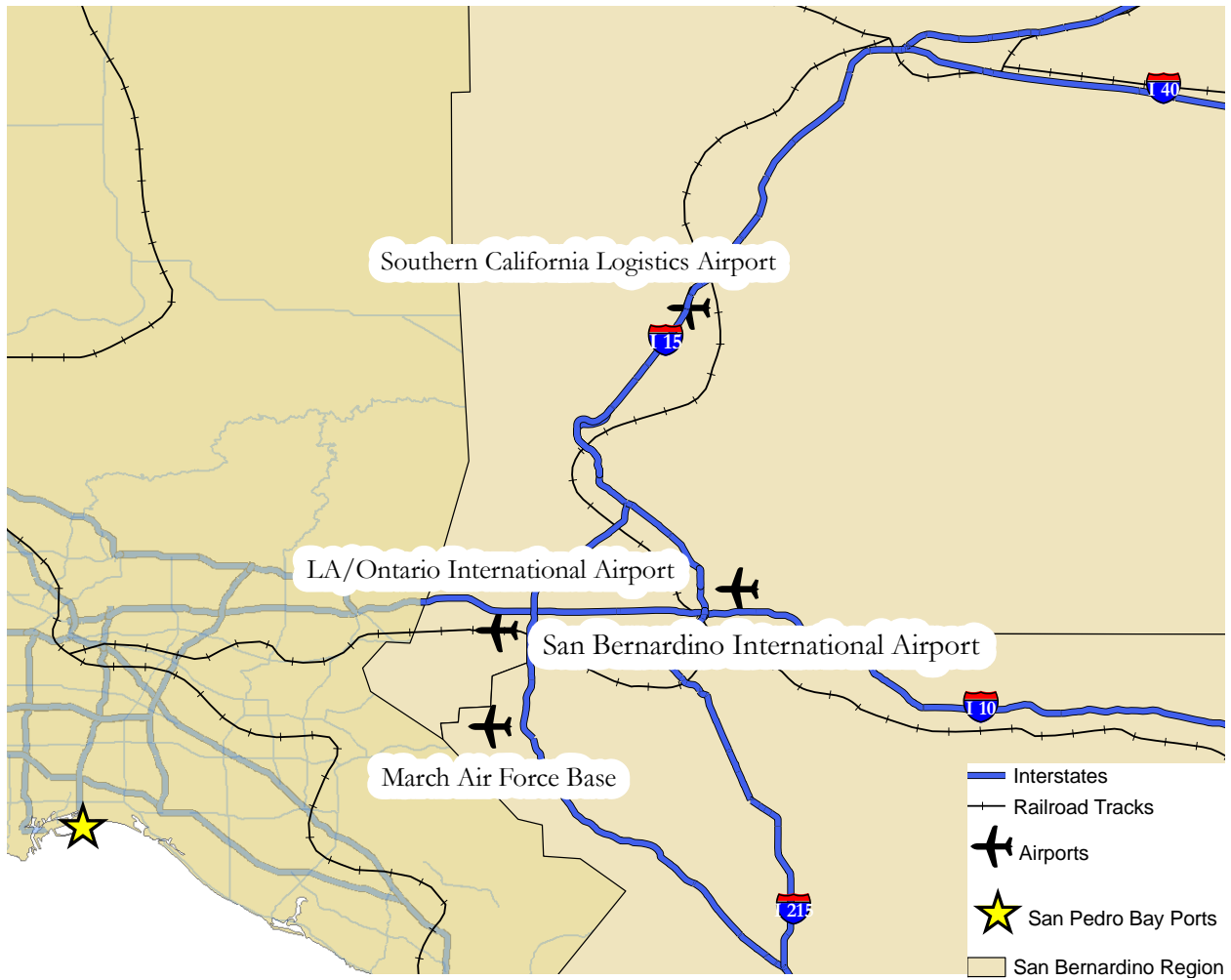
In a 2005 report for the Southern California Associations of Governments (SCAG), Leachman estimated the amount of import and export activity for the Ports of Los Angeles and Long Beach, while also evaluating the competition from other ports in the U.S. This report found that the San Pedro Bay Ports possess economic, logistical, and location advantages over all other ports on the West Coast.

An additional advantage of the Ports of Los Angeles and Long Beach is the increased capacity for transloading international merchandise. When merchandise is transloaded, goods are transferred from one size of container to another, often involving the transition from ship to truck, and then taken to warehouses to be redistributed. For many of the transloaded goods that leave the Ports of Los Angeles and Long Beach, the destination is the San Bernardino region, where the merchandise is transferred from short-haul to long-haul rail lines, or from rail to truck, or from truck to rail (Leachman 2005). The opportunity for the San Bernardino region to benefit from transloading is further advantaged by the fact that the Long Beach and Los Angeles Ports are the transloading destination for much of the U.S. import traffic. The West Coast ports have a much lower per cubic foot cost for transloading than the East Coast ports, and the San Pedro Bay Ports are the principle West Coast destination. The difference in cost is substantial, as imports are largely elastic, and a single cent savings may provide a company with the incentive to change routes. Fortunately for the San Bernardino region, the primary route seems to be the Ports of Los Angeles and Long Beach.

Airports:

LA/Ontario International Airport (ONT) is the largest airport in the San Bernardino region and is the primary trade hub for inland imports and exports. ONT has greatly expanded its operations in recent years, currently representing one of the largest airports in the region (and in the U.S.) in terms of total cargo volume (575 thousand tons in 2005). Passenger flows at ONT are also at record levels, reaching 7 million passengers in 2005 for the first time in its history. At its recent growth rate, ONT expects to serve 30 million passengers by 2025 (ONT Air Cargo Study 2003). In addition to ONT, the San Bernardino region also has access to March Air Reserve Base, the San Bernardino International Airport, and Southern California Logistics Airport in Victorville. Figure II-4 shows the locations of ONT, March Air Force Base, Southern California Logistics Airport, and the San Bernardino International Airport.

Figure II-4: Airport Access in the San Bernardino Region



Source: National Transportation Atlas Database

San Bernardino is in a prime setting for companies that need reliable goods movement, as it experiences far less congestion than the Los Angeles region. Goods that are brought to the San Bernardino region can quickly and easily move east and northward to major markets without long delays from traffic or obstruction. This provides companies in the San Bernardino region with an advantage when engaging in foreign trade, whether imports or exports (Leachman 2005).

METHODOLOGY

Much of this report identifies trends using data collected by the Port Import Export Reporting Service (PIERS). Data from other sources, particularly the Bureau of Labor Statistics and the Economic Census, provide a more complete picture of the impact of international trade on the region, and allows the estimation of certain statistics. This section outlines the methodology used in the remainder of the report. Detailed methodology is also outlined in Annex 1.

Local policy makers and researchers are well aware of the difficulties associated with obtaining international trade data at a sub-national level. Studies that attempt to examine trade at the sub-national level generally rely on data from U.S. customs districts (Kyser and Huang 2005, 2006) or use national data to estimate trade activity given a region's industrial structure (Leichenko and Silva 2004). Using these data sources to examine international trade at the county or city level is problematic: issues arise when attempting to disaggregate import and export activity at the local level. These methods produce uncertainty in terms of the international trade volume attributable to a particular local area, as the data is only available at the combined sub-national or national level.

To avoid some of larger problems associated with using this aggregate level data, the California Policy Institute at Claremont Graduate University (CPIC) acquired data from the Port Import Export Reporting Service (PIERS). PIERS collects data from over 90,000 bills of lading daily, making the data available for purchase.¹ The company provides detailed statistical information on the tonnage and estimated value of international transactions.² PIERS also collects the zip code that shipments originate from (for exports) or are destined for (for imports), allowing researchers to examine international trade for a specific county or city (for more information on PIERS' data collection procedures, see Annex 1). It allows CPIC to do what few other researchers are able to do: accurately portray international trade activity and trends at a local level.

It is important to note that PIERS data is limited to seaborne freight and thus fails to account for trade via other modes of transportation—specifically, air, truck, and rail. In order to reduce these inaccuracies, CPIC estimated the contribution of other modes of transportation using data from the Bureau of Transportation Statistics (BTS) for the period 2000 to 2005. Specifically, CPIC calibrated estimates based on transportation modal ratios derived from BTS data on air, truck and rail movements. For instance, in 2005, approximately 42% of U.S. international merchandise trade moved by water, while 26% moved via air, 20% moved via truck, and 5% moved via rail. CPIC then used the U.S. ratio of trade activity moving by vessel, air, truck, and rail to approximate total regional international trade.

The last section of this study uses the PIERS data to estimate the employment associated with international trade in San Bernardino and Riverside counties. The methodology to arrive at these estimates is two fold:

1. CPIC uses manufacturing, retail, wholesale, and transportation margins published by the U.S. Census Bureau to calculate the value added to the region by each sector of international merchandise trade. Essentially, gross margins are derived from the ratio of gross profit to sales revenue. Calculating the value added allows CPIC to estimate the “mark-up” associated with

commodities as they travel through the local area.

2. After calculating the value added associated with each industry, CPIC uses the Bureau of Labor Statistics' (BLS) "Employment Requirements" matrix to estimate the jobs associated with international trade in the local area.

These estimates provide a "static" or "snap-shot" view of employment related to international trade (Chentrans 2005). For more information on methods and underlying assumptions used to estimate employment, see Annex 1 at the end of this study (Ibid).

Finally, it is important to note that the PIERS data does not capture the impact of trade in services on the local economy. The data necessary to estimate impact on services does not currently exist at the local level. All the statistical information presented in this study refers to merchandise trade.

INTERNATIONAL TRADE STATISTICS AND TRENDS

Using trade data from PIERS, this section attempts to quantify the impact of international trade on San Bernardino and Riverside Counties. The section begins with an overview of trade activity in the region, including overall import and export figures. In addition to aggregate figures, this section examines recent trends in trade activity, important trade-related sectors and commodities, as well as the region's key trading partners.

4.1 ESTIMATED VALUES: LOCAL COUNTIES AND CITIES

According to PIERS data, total international merchandise trade in San Bernardino and Riverside counties amounted to \$17.5 billion in 2005 or close to 18.5% of aggregate income. As shown in Table IV-1, most of the region's trade activity is associated with imports. Imports represented 94% of total trade activity in 2005, which implies a trade imbalance for the region. Overall, the deficit amounted to \$16.4 billion or an import-to-export ratio of 17.3—up from a ratio of 16.4 in 2002.

Before proceeding with a detailed analysis, however, it is important to address what a trade deficit implies for the San Bernardino region. While trade deficits have important implications for the U.S. economy, the stigma associated with deficits at the national level is inappropriate for the San Bernardino region. As an international gateway, the San Bernardino region is in a unique position to benefit from both export and import activity. Data from the California Employment Development Department (EDD) indicates that many of the region's primary economic sectors stand to benefit directly from import activity (California EDD 2005). For instance, local wholesalers often benefit from all types of trade activity—whether goods are received as imports or shipped out as exports, wholesalers profit from the transaction. The employment implications of growing trade activity will be explored more fully in the last section of this report (See “International Trade and Employment,” on page V-1).

Table IV-1: Total Two-County Trade (2005)

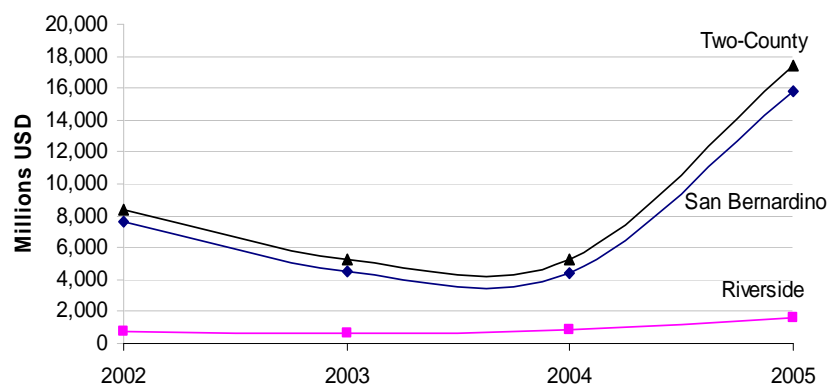
County	Exports (Millions)	Imports (Millions)	Total Trade (Millions)	Trade Deficit	Trade % of Income
San Bernardino	917	14,889	15,806	13,973	33%
Riverside	94	1,572	1,666	1,479	3%
Two-County	1,010	16,462	17,472	15,452	18%

Source: Port Import Export Reporting Service (PIERS)

Recent trends show a marked reduction in trade activity between 2002 and 2004, followed by a drastic increase in 2005—total trade nearly tripled between 2004 and 2005 (see Figure IV-1). Even after these data are adjusted to reflect inflation, total trade in the two-county region more than doubled from 2002 to 2005.³ It is important to point out that PIERS changed its reporting practices in 2002 and thus our analysis was constrained within the available four year period.⁴ With this caveat in mind, total trade values are approaching record levels and are determined almost entirely by year-to-year changes in imports.

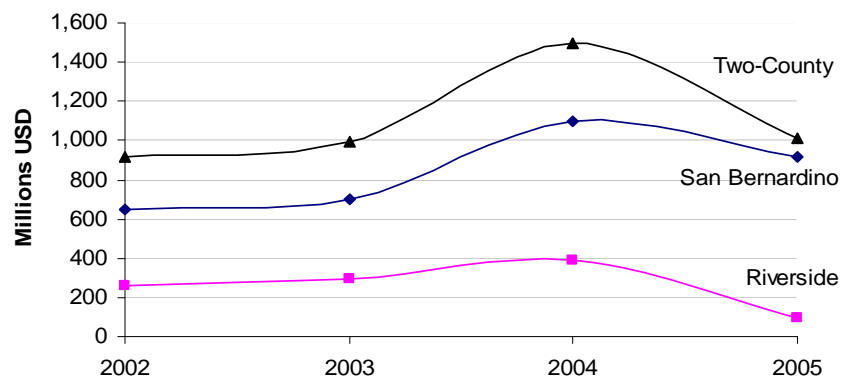
Despite export activity being relatively less significant in terms of total value, it is important to note recent trends. Exports displayed the opposite overall pattern compared to imports; however, the changes are far less pronounced. Exports increased to a relative high of close to \$1.5 billion in 2004, before dropping off slightly in 2005. Despite export growth slowing in 2005, the region maintained a 10.4% growth rate from 2002 to 2005. Healthy export growth between 2002 and 2005 is encouraging, and may suggest that companies in the two-county region are becoming more competitive and gaining inroads into foreign markets.

Figure IV-1: Total Two-County Trade (Estimated Value)



Source: Port Import Export Reporting Service (PIERS)

Figure IV-2: Two-County Exports (Estimated Value)



Source: Port Import Export Reporting Service (PIERS)

While Figure IV-2 shows that exports have declined slightly in 2005, studies at the national level describe a range of factors providing upward pressure on export activity, such as the rise of developing nations (i.e., India and China) and the falling value of the U.S. dollar (Clark 2006).

Although the data presented thus far provides valuable insight into regional trade trends, the obvious question remains: why did the San Bernardino region experience a reduction in trade activity during the years of 2003 and 2004? The primary factor was unprecedented levels of congestion at the Ports of Los Angeles and Long Beach, which slowed trade considerably, and caused businesses to use alternative ports.⁵ Based on information from the Port of Long Beach, Inland trade hit its lowest point at approximately the same time as congestion reached its peak—the fourth quarter of 2004 (Port of Long Beach 2005).

In addition to congestion, the national recession that began in 2001 (and was further exacerbated by the events of 9-11) most likely had some impact on the downturn. According to national indicators, the U.S. economy sustained job and income losses well into 2003 (Groshen, Potter, Sela 2004). Data from the EDD indicates that many of San Bernardino's industries displayed similar behavior over the roughly two-year period, with many of the region's industries recording negative or zero growth.

Table IV-2: City-Level Exports

City	2005 (Millions)	2002-2005 % Growth
Fontana	344	296.3%
Chino	277	41.2%
Ontario	220	101.5%
Temecula	41	-7.3%
Upland	32	-76.6%
Corona	24	-53.1%
Riverside	15	-88.4%
Rancho Cucamonga	10	-12.9%
Blythe	8	-46.5%
Colton	8	-2.5%
Montclair	7	-60.5%
San Bernardino	5	-72.7%
Redlands	3	-87.7%
Moreno Valley	2	-82.4%
Chino Hills	2	-91.6%
Adelanto	2	-60.5%
Rialto	2	300.0%
Highland	2	-36.7%
Palm Desert	1	-61.4%
Perris	1	458.8%

Source: Port Import Export Reporting Service (PIERS)

Table IV-3: City-Level Imports

City	2005 (Millions)	2002-2005 % Growth
Ontario	6,886	58.8%
Fontana	3,377	235.7%
Chino	2,092	514.8%
Rancho Cucamonga	1,215	10.8%
Corona	685	225.8%
Riverside	452	193.7%
Rialto	382	646.9%
Redlands*	288	...
Temecula	187	372.7%
Montclair	183	2102.6%
Hesperia	121	118.7%
San Bernardino	94	165.9%
Upland	90	496.2%
Chino Hills	61	117.4%
Murrieta	41	523.9%
Victorville	39	1469.2%
Palm Desert	35	1388.2%
Moreno Valley	34	557.4%
La Quinta	28	34.6%
Perris	23	591.1%

Source: Port Import Export Reporting Service (PIERS)

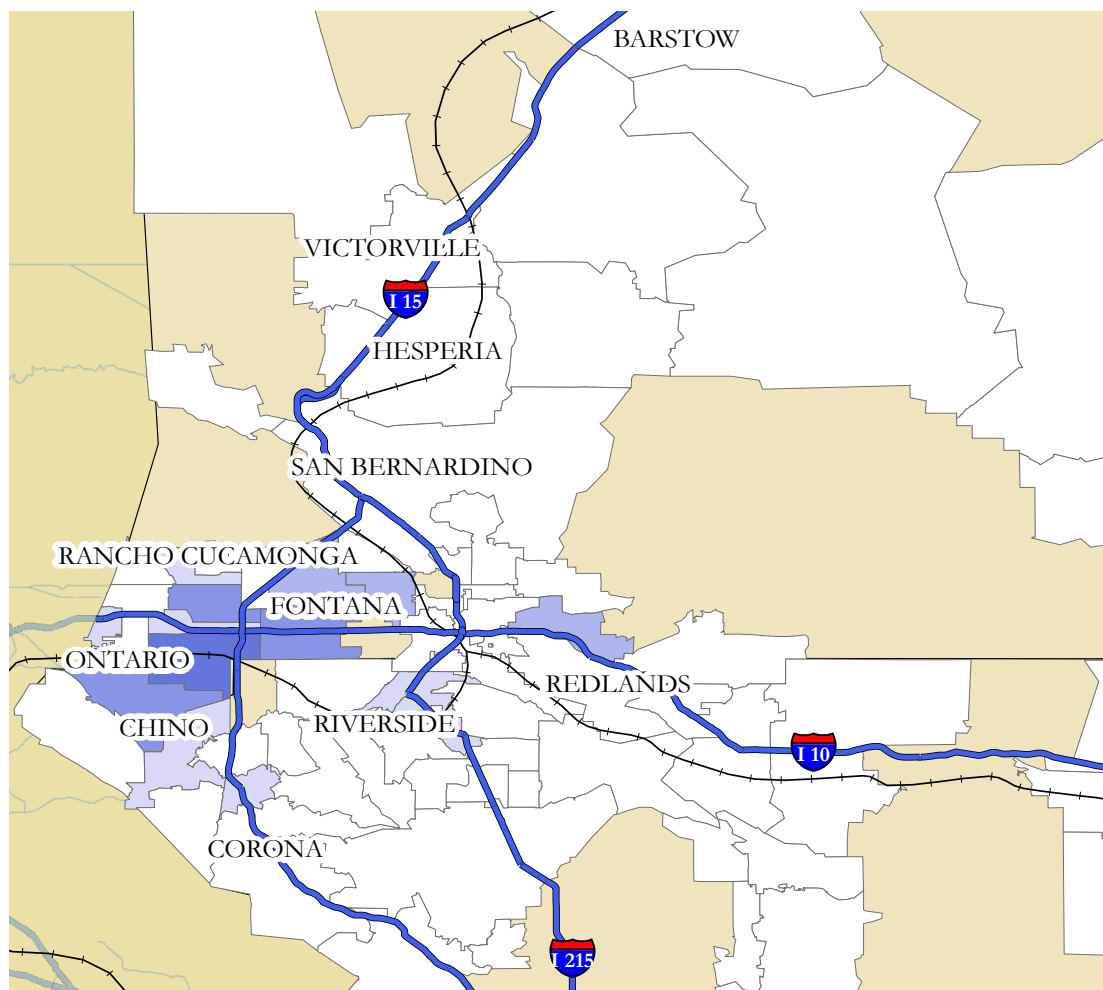
*Growth data not available

These data suggest that anything disrupting the flow of goods—such as congestion or the strikes by port workers in 2002—will have an immediate impact on Inland trade activity. Moreover, these data provide an indication of what the region is likely to expect if the infrastructure supporting regional goods movement is not maintained. To avoid similar downturns, it is critical for transportation and trade infrastructure to keep pace with regional trade flows.

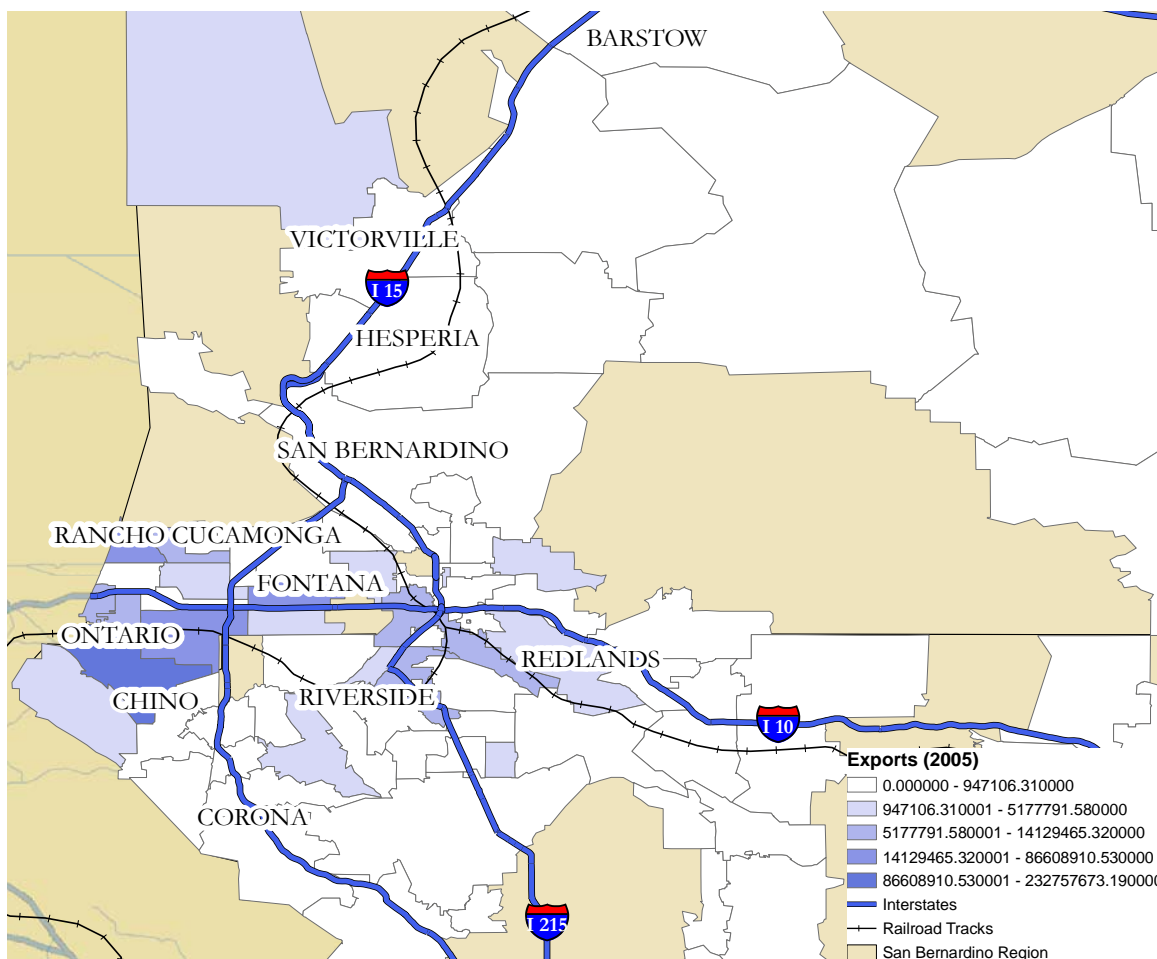
It is clear from these data that San Bernardino County is driving the region's international trade. According to Figure IV-1, there is an almost perfect correlation between regional trends and San Bernardino's trade trends. San Bernardino dominates both import and export activities—Riverside County only contributes roughly 9% to overall imports and exports. Much of this success may be associated with the strategic location of several of San Bernardino County's cities.

Table IV-2 provides city-level trade data for San Bernardino and Riverside Counties' top 20 cities in terms of total imports. According to these data, the City of Ontario leads the region in import activity with close to \$7 billion. The cities of Fontana, Chino and Rancho Cucamonga also recorded impressive import numbers, with each city importing over \$1 billion. Growth in imports far

Figure IV-3: City-Level Imports (2005)



Source: Port Import Export Reporting Service, National Atlas Maps

Figure IV-4: City-level Exports (2005)

Source: Port Import Export Reporting Service, National Atlas Maps

exceeded expectations, with the major importing cities recording growth rates from 58% to 514% during the period of 2002 to 2005. Although the remaining cities make up a relatively small percentage of overall imports (13%), the exponential growth recorded by these cities is certainly a positive development. It is important to note that the large growth rates are mainly the product of low initial import values. Despite this fact, these data indicate that a greater number of Inland cities are participating in import activity.

In terms of exports, many of the same cities are at the top of the list, including Fontana, Chino, and Ontario. Fontana leads the region in exports, with \$344 million and a growth rate of close to 300% during the period from 2002 to 2005. Chino's \$277 million was the second highest in the region, while Ontario recorded the third highest at \$220 million. Aside from these three cities, few other Inland cities contributed significantly to overall export activity in 2005. Moreover, aside from these three cities, all other cities displayed negative export growth from 2002 to 2005, possibly driving down aggregate export figures.

Figures IV-3 and IV-4 provide an alternative way to view trade data at the city level. Using geographic information systems (GIS) software, Figure IV-3 displays overall trade activity geospatially.

This figure indicates that trade is heavily concentrated around I10 and the I10-I15 interchange. According to the figure, the cities of Ontario, Chino and Rancho Cucamonga seem to be the epicenter of trade activity in the region, which is consistent with the data provided in Tables IV-2 and IV-3. Moreover, the level of trade activity decreases as one gets farther and farther from the epicenter, which is also consistent with the data provided in the tables.

Although far from providing definitive support for the importance of the transportation infrastructure, the geospatial results provide preliminary support for claim that the freeway and rail systems are critical to the area's success in international commerce. Even after trade activity is normalized to reflect population and income, each city's position relative to major freeways, railways, and airports is the critical factor in international trade success. While the importance of transportation networks to the success of local international trade activity is well documented for Southern California overall (Kyser and Huang 2005, 2006), these analyses provide preliminary support the importance of these networks, especially for the San Bernardino region area (see also: Husing 2005).

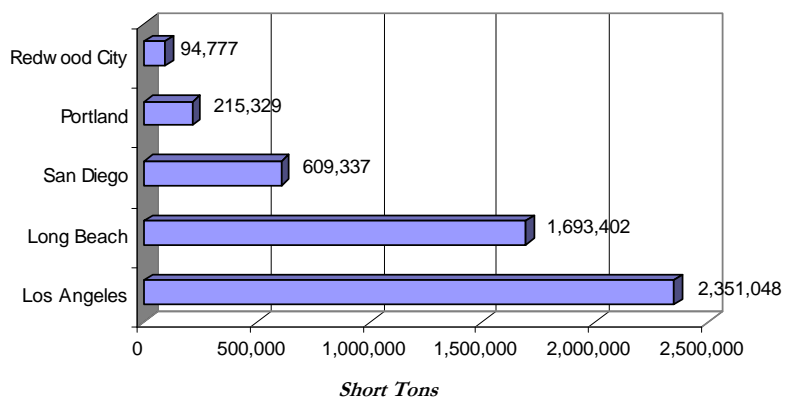
4.2 ENTRY POINTS AND INLAND TRADE

Seaports

As indicated in the first section of this report, the proximity to major U.S. trading ports make the San Bernardino region a prime location for trade-related industries. It is therefore not surprising that the ports of Los Angeles and Long Beach are far and away the most important hubs for the region's international vessel trade. As reported in Figure IV-5, the Ports of Los Angeles and Long Beach contributed over 4 million short tons (which are the primary metric used to describe the quantity of non-containerized cargo, usually used to describe a containerized cargo that is 20-foot equivalent units (TEUs)) in imports to the region in 2005. The two ports represented close to 77% of all import activity to the region.

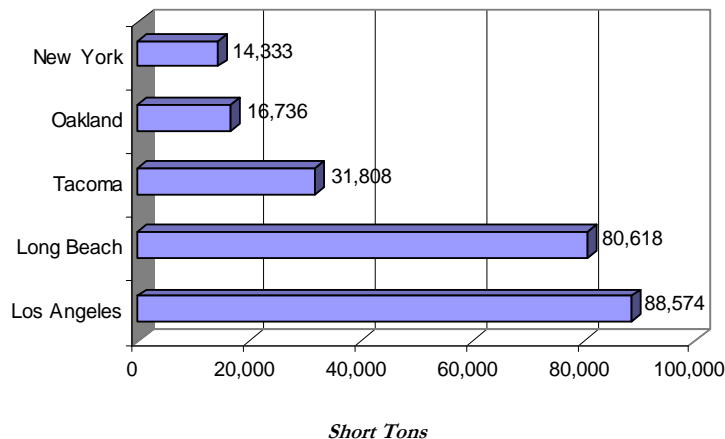
The numbers are similar for exports. As shown in Figure IV-6, the Ports of Los Angeles and

Figure IV-5: Two-County Imports by U.S. Port



Source: Port Import Export Reporting Service

Figure IV-6: Two-County Exports by U.S. Port



Source: Port Import Export Reporting Service

Long Beach were responsible for close to 62% of all vessel export activity measured in short tons. As with imports, the closest port competitors—mostly on the West Coast—fail to contribute even half of what the San Pedro Ports provide in terms of overall tonnage.

From 2004 to 2005, import growth at the San Pedro Ports more than doubled, while exports grew at a rate of 2.5%. The primary factor leading to double digit import growth was a considerable reduction in the port congestion that impacted the San Pedro Ports over the past two years (Kyser and Huang 2005). Analysts agree that intense transpacific trade growth was the key contributor to port congestion. At the Port of Long Beach, for example, annual transpacific containerized cargo increased by 24%, far in excess of forecasts in the 3% range (Port of Long Beach 2005). Southern California's ports lacked the labor and physical infrastructure to handle such a drastic increase in trade activity—a phenomenon that triggered negative ramifications for the region's rail and trucking systems as well.

Multiple projects and policies have been enacted to respond to the challenges of congestion. Examples of these projects and policies include:

- To mitigate problems associated with the lack of trained employees at the San Pedro Ports, the Pacific Maritime Association (PMA) increased its workforce by roughly 2,000 employees in 2005 (Port of Long Beach 2005).
- As part of the Alameda Corridor Transportation Authority (ACTA) "Congestion Relief Initiatives," the maritime terminal operators have initiated PIERpass, which is a system designed to keep terminals open later and on the weekends (ACTA 2005). PIERpass offers \$80 container fee waivers for individuals moving goods on the weekends or nights. Close to 30% of the area's trucks are choosing to use the system, decreasing peak hour traffic and congestion (Husing 2005).
- The ACTA has proposed establishing a short-haul rail system that would shuttle containers between the twin ports and the San Bernardino region—i.e., the "Shuttle Train Demonstration Project" (ACTA 2005).
- The ACTA has proposed creating Inland Container Yards to relieve terminal pressure, extend warehousing, and increase PIERpass opportunities (ACTA 2005).

Despite improvements in lowering congestion, infrastructure and capacity issues continue to constrain growth in international trade. Recognizing these issues, the Southern California Association of Governments (SCAG) has developed a \$26.2 billion Goods Movement Action Plan (SCAG 2005), which details Southern California's transportation and trade priorities. Despite these various remedies to the congestion problems associated with international trade, the San Bernardino region may need to address severe infrastructure and logistical issues in the near future. How these issues are addressed could determine the area's competitive position in international trade economies in the future (for more on specific policy proposals to facilitate transportation infrastructure, see Husing 2005).

A final note on reducing congestion. In the Fall 2006 election, California voters approved proposition 1A, which protects transportation funds and proposition 1B, which invests considerable funds into improving and revamping California's highway system, reducing traffic, and improving port security. This is a positive sign for the future of international trade in the San Bernardino region, particularly trade that depends on a reliable and consistent transportation infrastructure. However,

this is contingent on infrastructure projects in the San Bernardino region receiving the necessary attention and funding from the state of California.

Inland Airports

While vessel trade is a critical component of the region's international activity, air cargo trade also plays a significant role. According to data from the U.S. Department of Commerce on the Los Angeles Customs District, 17.2% of all imports and 46.7% of all exports moved via

air. Although data on air cargo merchandise is not available at the county or city level, the LA Customs District data provides a snapshot view of air-cargo international trade in the area. The data indicates that the primary mode of transportation for high value products (such as “electrical apparatus” and “electronic machinery”) is air cargo. That is, the data indicates that the commodities reported in this report are likely biased toward lower value goods.

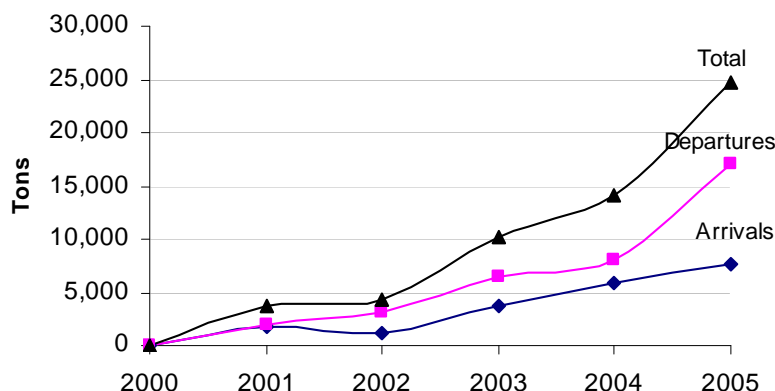
LA/Ontario International Airport (ONT) is the largest airport in the region and is a major trade hub for Inland imports and exports. LA/Ontario International Airport has greatly expanded its operations in recent years, currently representing one of the largest airports in the region (and in the U.S.) in terms of total cargo volume (575 thousand tons in 2005).

Figure IV-7 provides a time-series plot of ONT's international air cargo trade over the period 2000 to 2005. As shown in the figure, both arrivals (i.e., imports) and departures (i.e., exports) have increased considerably over the five-year period. It is clear from the time-series, however, that departures grew considerably from 2004 to 2005 and currently make up a significant portion of total international movement. Specifically, total air cargo trade increased by 75.6% from 2004 to 2005, with imports increasing by 29.5% and exports increasing by 109.3%. As noted previously, it is important to keep in mind that air cargo tends to consist of high value/low weight high-tech goods and thus contributes more to the regional economy than suggested by its modal share of weight.

In 2005, the United Postal Service (UPS) selected ONT as one of five new regional heavy freight hubs comprising the backbone of the new UPS Supply Chain Solutions network. In addition, UPS received operating rights to China, expanding its China Express service. These developments not only contributed to the significant growth rates in 2005, but should enhance ONT's growth in the future. According to recent SCAG forecasts, ONT is expected to reach close to 2.25 million tons of total trade by 2030, which is just below estimates for Los Angeles International Airport (LAX) (SCAG 2004).

While ONT will remain the dominant hub for Inland air cargo well into the future, several other Inland airports are expected to record significant growth over the next several decades. These air-

Figure IV-7: International Air Cargo Movement (ONT)



Source: Los Angeles World Airports (LAWA)

ports include the joint-use March Air Reserve Base, Southern California Logistics Airport (SCLA), and the San Bernardino International Airport. DHL recently announced that March Air Base will be its western regional headquarters; both March Air Base and San Bernardino International are projected to have upward of a million tons of air cargo movement by 2030 (SCAG 2004).

4.3 TRADE COMMODITIES

According to PIERS data, many different types of goods flow through the San Bernardino region each year. Before presenting the top trade commodities, it is important to note that these data only include merchandise trade via vessel. As a result, the top trade commodities presented in this section are likely biased toward low-value commodities.

Table IV-4 reports the top commodities in the San Bernardino region. As shown in the table, Inland import commodities consist primarily of intermediate and consumer goods.⁶ Machinery parts topped the list in 2005, with an estimated value of \$1.5 billion or 11.4% of overall imports. Merchandise in this category primarily consisted of items such as computer parts and cables, as well as various other office-related components. Iron and steel also provided a considerable contribution to overall imports, with an estimated value of close to \$1.3 billion or 9.4% of total imports. Goods in this category consisted largely of processed steel and ingots. The top 15 commodity categories dominated San Bernardino-area trade, contributing close to 85% of total imports.

Data from the U.S. International Trade Association (ITA) shows that many of the region's top import commodities in 2005 are also among the top commodities for the U.S. overall. The commodities that topped both lists include Machine Parts (#2 U.S. import), Electronics (#3 U.S. import), Vehicle Parts (#4 U.S. import), and Furniture (#10 U.S. import).

Table IV-4: Top Import Commodities

Commodity Description	2005 (Millions)	% of Regional Imports	Ratio =
			% Regional % U.S.
Machinery Parts, etc.	1,529	11.4%	1.3
Iron & Steel	1,257	9.4%	13.2
Electronics	1,144	8.6%	1.3
Medical or Surgical Instruments	1,118	8.4%	1.4
Furniture	1,116	8.3%	7.4
Base Metals (Misc.)	1,108	8.3%	34.6
Vehicle Parts	1,008	7.5%	1.2
Rubber	693	5.2%	10.5
Toys	504	3.8%	4.0
Articles of Iron or Steel	457	3.4%	4.7
Ceramic Products	384	2.9%	18.8
Apparel Articles and Accessories	366	2.7%	2.2
Leather Goods	274	2.0%	7.5
Paper & Paperboard	198	1.5%	2.8
Footwear	185	1.4%	2.5
Total		84.8%	

Source: Port Import Export Reporting Service (PIERS)

To estimate the industries that the San Bernardino region has a particular advantage in, CPIC calculated the ratio of regional industry trade contribution to national industry contribution, which allows one to analyze the relative contribution of a commodity to the region. This is detailed in the last column in Table IV-4. This calculation serves multiple purposes: first, it allows the area to identify those commodities that provide an above average percent of the total trade of the area. Second, this gives the area a unique perspective on strengths in trade. Third, this technique allows the area to identify “up and coming” sectors of the economy that might benefit from some assis-

tance, such as paper and paperboard, which has a ratio of 2.8. This ratio indicates the San Bernardino region is importing paper and paperboard at a higher rate than the country as a whole. However, at 2.8, the ratio also indicates that those companies dealing in paper and paperboard have yet to reach their growth potential. All together, a ratio of 2.8 would suggest that there are enough companies in the area dealing with paper and paperboard to deserve attention from economic development activities, but still room in the market for additional companies.

It is also important to mention the high number of consumer goods listed in Table IV-4. It is reasonable to assume that at least a percentage of consumer merchandise such as furniture, toys, apparel, and footwear stays in the San Bernardino region. This finding further emphasizes some of the positive implications of growing imports for regional economies. We may assume that local firms are importing low-cost consumer goods, and, in doing so, increasing the profitability of business activity. Moreover, it is likely that the ability to import low-cost consumer goods also places downward pressure on local prices.

The region's top export commodities are dominated by raw materials, including scrap metal and raw fabrics. These two raw materials alone represented close to 48.5% of the value of all commodities exported in 2005. As noted previously, these numbers fail to represent high value merchandise goods. For the LA Customs District as a whole, the top export commodity in 2005 was "electrical apparatus," 93.6% of which was moved via air (Kyser and Huang 2006). Moreover, based on statistics from Los Angeles World Airports (LAWA), LA/Ontario International Airport recorded double digit export growth in 2005 (see pages IV-7 and IV-8 for more information).

Even with these considerations in mind, the region's exports are among the top growing commodities in the U.S. Based on data from the ITA, the average growth rate of U.S. exports was approximately 10.3% from 2004 to 2005. The U.S.' growth rate for the top commodities in the San Bernardino region, however, was higher at approximately 13%. Despite the decline in exports shown in Figure IV-2 (on page IV-2), this finding provides some insight on the relative health of the region's export industry and provides further justification for a positive outlook for future export activity.

Table IV-5: Top Export Commodities

Commodity Description	2005 (Millions)	% of Regional Exports	Ratio = % Regional / % U.S
Cements & Base Metals	196	25.9%	114.0
Cotton & Woven Fabric	171	22.6%	440.0
Vehicle Parts	66	8.7%	1.4
Articles of Plastic	45	6.0%	1.4
Medical or Surgical Instruments	40	5.2%	0.9
Base Metals (Misc.)	37	4.9%	20.3
Vehicle Parts	26	3.5%	0.2
Edible Perpetrations (Misc.)	26	3.4%	8.1
Furniture	24	3.2%	2.9
Articles of Aluminum	17	2.3%	2.8
Soap, Candles & Dental Preparations	14	1.8%	4.7
Musical Instruments & Parts	12	1.6%	24.7
Paper & Paperboard	10	1.3%	0.9
Oil Seed	7	0.9%	0.9
Railway & Traffic Signal Equipment	6	0.8%	3.3
Total		92.0%	

Source: Port Import Export Reporting Service (PIERS)

Table IV-6: The San Bernardino Region's Top Trading Partners (2005)

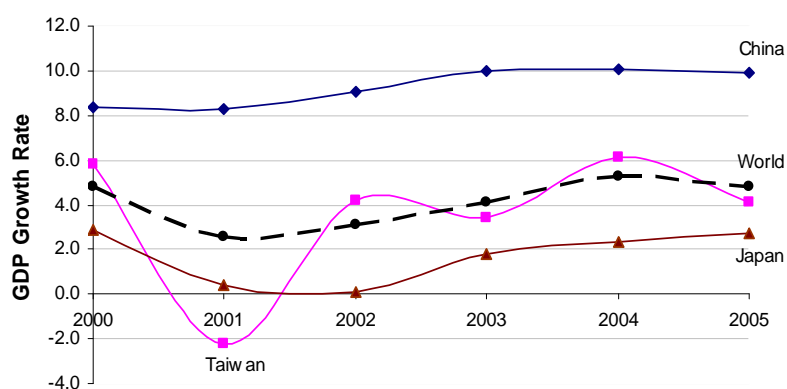
Country	Imports	Exports	Total Trade	% of Total	Economic Growth Projections		
	(Millions)	(Millions)	(Millions)	Trade	2005	2006	2007
China	6,739	394	7,133	50.2%	9.9	9.5	9
Taiwan	1,159	10	1,169	8.2%	4.1	4.5	4.5
Japan	1,119	150	1,268	8.9%	2.7	2.8	2.1
Australia	849	3	852	6.0%	2.5	2.9	3.2
Hong Kong	644	51	695	4.9%	7.3	5.5	4.5
South Korea	556	25	581	4.1%	4	5.5	4.5
Indonesia	248	4	252	1.8%	5.6	5	6
Germany	232	6	238	1.7%	0.9	1.3	1
Thailand	228	10	237	1.7%	4.4	5	5.4
Russia	206	6	212	1.5%	6.4	6	5.8
Total	11,980	659	12,639	89.0%			

Source: Port Import Export Reporting Service (PIERS); World Economic Outlook, International Monetary Fund

4.4 TRADING PARTNERS

The San Bernardino region's main trading partners are primarily located in Asia and the South Pacific. This finding is not surprising given the region's geographic location on the West Coast, the high economic and trade growth rates of several Asian countries, and the region's proximity to the San Pedro Bay Ports. Data from the Pacific Maritime Association (PMA) confirms that the San Pedro Bay Ports not only represent the largest port complex in the U.S. in terms of total trade, but they are also the largest recipient of export goods from Asian markets, including China, Japan, and Taiwan (Kyser and Huang 2006). What is true for the San Pedro Bay ports is also true for the San Bernardino region: Asian countries represent the majority of the area's trading partners. As shown in Table IV-6, seven out of the region's top ten trading partners are located in Asia or the South Pacific, representing 84.1% of all vessel trade or close to \$12 billion.

Table IV-6 provides estimated growth rates of the region's primary trading partners through 2007, while Figure IV-7 demonstrates the historic growth rates of the principle trading partners in Asia. If current trends continue, the San Bernardino region

Figure IV-7: Economic Growth Rates of the Region's Top Trading Partners

Source: World Economic Outlook Database, International Monetary Fund

will have even more trade volume to capitalize upon in the coming years.

Before proceeding with the analysis for 2005, a word of caution is in order. These data only represent maritime vessel trade and in doing so greatly underestimate regional trade with Canada and Mexico—served mostly by truck and rail. According to data from the U.S. Bureau of Transportation Statistics, in terms of value, 95.4% of exports to Canada and 98.5% of imports from Canada enter California by truck and rail. Likewise, 95.7% of exports to Mexico and 98.3% of imports enter the state via these two modes.

The dramatic increase in the San Bernardino region's (and Southern California's) trade activity over the past several years has much to do with the phenomenal economic and international trade growth rates experienced in Asian countries—primarily in China. Developing economies in Asia such as China, Taiwan, South Korea, Thailand and Indonesia all recorded impressive growth rates in 2005. According to projections from the International Monetary Fund (IMF), these economies are expected to maintain healthy growth rates into 2007.

China

International trade activity between the U.S. and China has grown significantly over the past several decades. Two-way trade between the U.S. and China rose from \$5 billion in 1980 to \$285 billion in 2005. Currently, China is the U.S.' third largest trading partner and second largest source of imports (Morrison 2006). Over the past several years, trade growth with China has outpaced growth with all other trading partners—total trade increased 22.5% from 2004 to 2005, with exports increasing by 20.5% and imports increasing by 23.8%. Growing trade activity with China is consistently cited as among the most important factors leading to the U.S.' record trade imbalance (Armstrong 2006). Exemplifying this trend is the fact that the U.S.' trade deficit with China reached over \$200 billion in 2005 (Morrison 2006).

China alone represents over 50% of total trade activity in the San Bernardino region—\$7.1 billion—making it far and away the region's most important trading partner. As shown in Table IV-6, China is the region's principle trade partner in terms of both imports and exports. Tables IV-7 and IV-8 provide

Table IV-7: Top Imports from China

Commodity Description	Imports (Millions)
Medical & Surgical Equipment	831
Base Metals (Misc.)	828
Electronics	693
Machinery Parts	691
Furniture	668
Toys	441
Ceramic Products	302
Apparel Articles & Accessories	295
Leather Products	263
Articles of Iron and Steel	246
Other	1,434

Source: Port Import Export Reporting Service (PIERS)

Table IV-8: Top Exports to China

Commodity Description	Exports (Millions)
Cements & Base Metals	186
Cotton & Woven Fabrics	167
Soap, Candles & Dental Preparations	13
Articles of Aluminum	7
Paper & Paperboard	4
Articles of Plastic	3
Raw Hides & Skins	2
Articles of Iron & Steel	2
Vehicle Parts	2
Base Metals (Misc.)	2
Other	7

Source: Port Import Export Reporting Service (PIERS)

data on trade with China separated by commodity type. According to Table IV-7, merchandise in the medical and surgical equipment category was the region's top import in 2005, representing \$831 million in estimated value. Medical equipment was followed closely by base metals, representing \$828 million. In addition, electronics, toys, and apparel imports all ranked high on the list, which is consistent with data on trade with China at the LA Customs District level.

Exports to China from the San Bernardino region consist primarily of raw materials and intermediate goods used in the manufacturing process. The top export commodity sector in 2005 consisted of cements and base metals, with an estimated value of \$186 million. Cotton and woven fabrics followed closely behind in the number two spot, with \$167 million. According to data on overall trade flows for the period 2002 to 2005, it appears that the region is exporting raw materials to China, which are then imported back into the U.S. in the form of intermediate products and consumer goods.

While China has made considerable progress in liberalizing trade policies since its accession into the World Trade Organization (WTO) in 2001, significant barriers have yet to be dismantled. Import barriers, an inconsistent legal system, and limitations to market access make it difficult to conduct business with Chinese companies (PRS 2006). Moreover, several issues related to U.S.-China trade relations have direct implications for the San Bernardino region's companies, including:

- The growth and overall size of the U.S.' trade imbalance with China, which many politicians and industry analysts suggest is an indicator of an unfair trade relationship.
- Many analysts have charged that by fixing China's currency—the yuan—to the U.S. dollar, the Chinese government is providing domestic firms with an unfair trade advantage. By not allowing its currency to vary based on market forces, the Chinese yuan is undervalued compared to the U.S. dollar, making U.S. exports more expensive and imports from China less expensive. Estimates on the extent of the undervaluation range from 15-40% (Morrison 2006).
- The United States Trade Representative (USTR), in a report conducted in December of 2005, stated that while China has made progress in meeting its commitments under the WTO, several "serious short falls remain" (Morrison 2006). Among the most prominent short comings include problems securing intellectual property rights, discriminatory taxes and export subsidies, and unfair industrial policies.

Legislation has been introduced in Congress to address issues pertaining to U.S.-China trade relations; specifically, a number of bills have been introduced to address intellectual property rights and China's currency policy (Morrison 2006). Maintaining favorable U.S.-China trade relations is critical to the San Bernardino area's continued trade success. If a more protectionist stance is adopted by Congress in the coming years, it will have direct ramifications for local industries participating in international trade. As shown in Table IV-6, protectionist policies related to China have the potential to impact close to 50% of the San Bernardino region's international trade

Other Asian Trading Partners

While China provides a significant portion of the region's trade activity, Taiwan and Japan also add to overall trade figures, with both nations contributing over \$1 billion in total trade. Given the two nations' contribution to overall Southern California trade, the importance of Taiwan and Japan to

Table IV-9: Top Imports from Taiwan (2005)

Commodity Description	Imports (Millions)
Machinery Parts	337
Electronics	164
Base Metals (Misc.)	142
Furniture	84
Articles of Iron and Steel	67
Vehicles & Parts	63
Plaster	59
Tools	40
Medical & Surgical Equipment	35
Edible Vegetables & Fruits	17
Other	147

Source: Ports Import Export Reporting Service

Table IV-10: Top Exports to Taiwan (2005)

Commodity Description	Exports (Millions)
Paper & Paperboard	1.7
Articles of Aluminum	1.7
Cements & Base Metals	1.4
Vehicles & Parts	1.2
Articles of Wood	1.1
Articles of Copper	1.0
Furniture	0.9
Iron & Steel	0.6
Base Metals (Misc.)	0.3
Edible Preparations	0.3
Other	0.3

Source: Port Import Export Reporting Service

regional trade is not surprising. According to data from the U.S. Commerce Department, Taiwan is the LA Customs District's fourth largest trading partner, while Japan is the Customs District's second largest trading partner after China. While Taiwan and Japan are not trading on the same level as China, their contribution to the San Bernardino region's economy is significant. Furthermore, evaluations of trade with Taiwan and Japan shows the potential for diversity in trade activity for the San Bernardino region.

Taiwan

PIERS data indicates that imports from Taiwan are largely consistent with overall trade in Southern California. The Inland region's top imports from Taiwan included machinery parts (\$337 million), electronics (\$164 million), and base metals (\$142 million). Likewise, machinery parts, electronics, and articles of metal were all among the top imported goods to Southern California in 2005—these goods, along with electronics and electronic related products, make up significant portions of Southern California's overall trade (Kyser and Huang 2006).

Exports to Taiwan fail to contribute much in terms of value to overall regional export activity. The region's most important export to Taiwan (paper and paperboard) only contributed close to \$1.7 million.

Table IV-11: Top Imports from Japan (2005)

Commodity Description	Imports (Millions)
Vehicles & Parts	530
Machinery Parts	227
Articles of Rubber	170
Edible Vegetables & Fruits	77
Medical & Surgical Equipment	25
Cements & Base Metals	20
Base Metals (Misc.)	18
Electronics	10
Toys	9
Musical Instruments & Parts	6
Other	23

Source: Ports Import Export Reporting Service

Japan

For many years, Japan has been an important contributor to overall Southern California trade. As recently as 2004, Japan was the primary destination of Southern California exports—China replaced Japan as Southern California’s top export destination in 2005 (Kyser and Huang 2006). The San Bernardino region’s trade with Japan is also generally consistent with trade patterns for Southern California overall. The region’s top imports from Japan in 2005 included vehicles and parts (\$530 million), machinery parts (\$227 million), and articles of rubber (\$170 million). Trends for the San Bernardino region mimic those of the LA Custom district, where vehicles were the primary import from Japan in 2005, while machinery (#8) and rubber (#6) were also important import trade commodities.

Unlike Taiwan, Japan provides an important export destination for San Bernardino’s merchandise. Japan was the region’s second largest export partner in 2005, with close to \$150 million in goods traded. Primary goods included base metals (\$30 million), vehicles and parts (\$29 million), and medical and surgical equipment (\$27 million).

Table IV-12: Top Exports to Japan (2005)

Commodity Description	Exports (Millions)
Base Metals (Misc.)	30
Vehicles & Parts	29
Medical & Surgical Equipment	27
Edible Preparations	20
Furniture	20
Railway Equipment	6
Oilseeds & Grain	5
Articles of Aluminum	4
Machinery Parts	4
Articles of Iron and Steel	1
Other	3

Source: Port Import Export Reporting Service

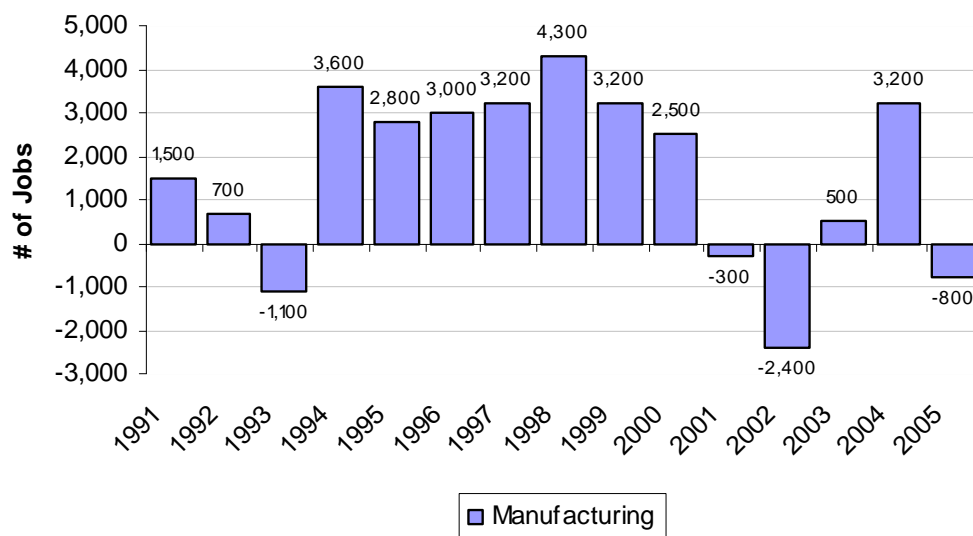
INTERNATIONAL TRADE AND EMPLOYMENT

While overall trade statistics present valuable information on the importance of international commerce for San Bernardino communities, these data fail to specify trade's impact on employment and economic development. What do increased imports and exports mean for local communities and residents? To answer this question, CPIC estimated the local jobs created in industries directly and indirectly related to the production of international merchandise. These estimates provide a more complete picture of the impact that international trade has on the San Bernardino region.

5.1 A BRIEF HISTORICAL OVERVIEW OF REGIONAL EMPLOYMENT

It is common knowledge that regional economic development is inextricably linked to regional employment levels. Historically, San Bernardino County relied on its manufacturing industry for well-paying jobs for local residents. In 1990, manufacturing employment represented 14% of all private employment, with the percentage increasing throughout the 1990s. In 2000, however, trends in manufacturing employment started to slow and actually displayed negative job gains in 2005. The recent decrease is likely the product of increased foreign competition, increases in the cost of domestic manufacturing, and a national economic recession impacting businesses in the aftermath of September 11, 2001. Although the recession associated with 9/11 was short-lived, the regional

Figure V-1: Year-to-Year Change in Manufacturing Employment

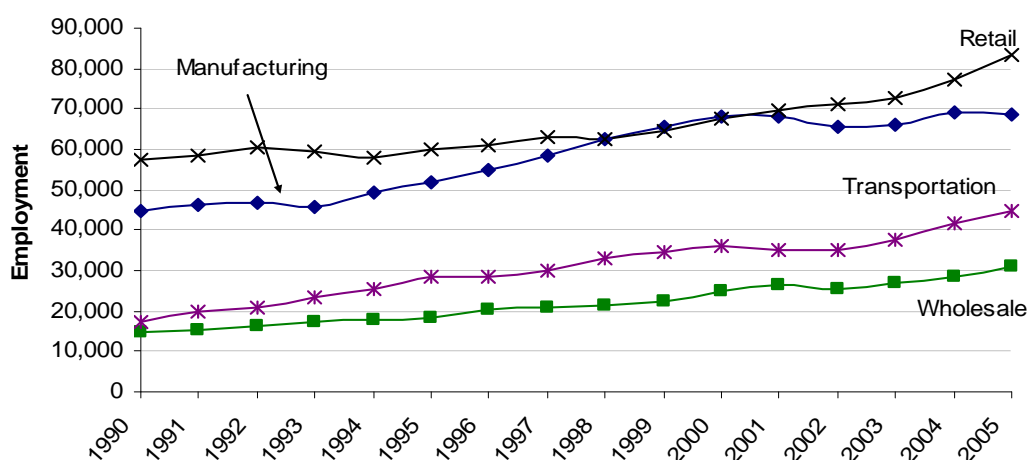


Source: California Employment Development Department

manufacturing industry continues to struggle to provide job growth.

Decreases in manufacturing employment has impacted the San Bernardino region particularly hard, as heavy manufacturing was the primary high wage blue collar employment source in the region. Although the decline in manufacturing employment has been national in scope, the San Bernardino area was hit especially hard due to the low education level held by many of the residents. As a result, the San Bernardino region must look to other industries to provide high-wage jobs to the sector of the population with manufacturing skills and low education. *Industries associated with international trade may provide the area with employment for these sectors of the population.*

Figure V-2: Employment in Trade-Related Industries



Source: California Employment Development Department

Looking into the future, foreign competition—primarily from Asian economies such as China—will continue to constrain regional manufacturing growth. While increased international trade activity will likely have negative implications for the regional manufacturing industry, it provides considerable opportunities for other industries in the San Bernardino region. International trade provides the opportunity for employment growth in several industries that are crucial to the San Bernardino region's economic health, including the retail industry (16% of private employment in 2005), the transportation and logistics sector (14% of private employment) and the wholesale industry (6%).

5.2 EMPLOYMENT ESTIMATES FOR THE SAN BERNARDINO REGION

Two-county employment related to the production of international merchandise in 2005 was just over 50,000. Of the total jobs generated, 46,000 (or 90%) are located in San Bernardino County. Close to 24,000 trade-related jobs have an average annual salary of \$35,000 or more. Primary industries related to international trade include retail (20,926), wholesale (11,776), manufacturing (2,578) and administrative support (2,383). When excluding government jobs, the production of international merchandise is responsible for 8.5% of the County of San Bernardino's private employment.

Table V-1: Employment Generated by Trade, San Bernardino County (2005)

Industry Description	Imports	Exports	Total	Average Salary
Agriculture	187	22	210	26,156
Mining	56	19	75	74,776
Utilities	64	6	70	41,236
Construction	171	11	182	41,028
Manufacturing	2,016	562	2,578	39,208
Wholesale	11,168	607	11,776	44,096
Retail	20,568	358	20,926	26,728
Transportation & Warehousing	868	86	954	37,596
Information	666	36	701	47,008
Finance & Insurance	598	40	638	53,196
Real Estate, Rental, Leasing	442	22	465	40,404
Professional, Scientific, & Technical Services	1,447	99	1,547	45,916
Management	696	48	745	55,848
Administrative Support	2,265	118	2,383	22,464
Educational Services	71	3	74	34,528
Health Care	48	2	50	41,184
Entertainment & Recreation	219	11	230	18,408
Food Services	465	26	491	13,520
Other Services	380	26	406	22,048
Government	993	58	1,051	51,272
Total	43,389	2,163	45,552	

Note: Estimates Calculated by the California Policy Institute at Claremont (CPIC)

Table V-2: Employment Generated by Trade, Riverside County (2005)

Industry Description	Imports	Exports	Total	Average Salary
Agriculture	20	2	22	26,156
Mining	6	1	7	74,776
Utilities	7	1	7	41,236
Construction	0	1	1	41,028
Manufacturing	234	87	320	39,208
Wholesale	1,221	68	1,289	44,096
Retail	2,101	18	2,119	26,728
Transportation & Warehousing	92	8	100	37,596
Information	71	4	75	47,008
Finance & Insurance	63	4	68	53,196
Real Estate, Rental, Leasing	47	2	49	40,404
Professional, Scientific, & Technical Services	154	11	165	45,916
Management	73	5	79	55,848
Administrative Support	241	13	254	22,464
Educational Services	18	0	18	34,528
Entertainment & Recreation	23	1	24	18,408
Food Services	49	3	52	13,520
Other Services	40	2	42	22,048
Government	104	6	110	51,272
Total	4,564	237	4,801	

Note: Estimates Calculated by the California Policy Institute at Claremont (CPIC)

It is important to note that these estimates exclude multiplier effects. As pointed out in Chentens (2005), the matrix used to calculate the estimates shows “that the impacts of all the purchases of inputs to production, but do not add in the impact of spending for consumer goods by those people earning income generated by producing the goods.” If these multiplier effects were included, the employment impact of international trade would be larger.

It is important to note that the estimates given for the “Transportation & Warehousing” sector appear to be slightly underestimated. Husing (2005) highlights the importance of growing regional employment in the truck transportation and warehousing sector. The apparently low estimates, however, are likely the product of the data used to derive the estimates and the exclusion of additional multiplier effects. First, PIERS data (which is the only data source available at the regional level) only provides the international trade entering and leaving the U.S. ports associated with companies in the San Bernardino region. As such, the estimates fail to include the transportation jobs associated with Inland companies that move goods directly from the ports to other regions—and vice versa regarding exports. Second, the estimates do not include the transportation jobs associated with moving goods out of the region once regional production is complete. If these factors were included, employment in this sector would be larger.

According to CPIC’s estimates, employment related to the production of international merchandise generated close to \$1.6 billion in total income for the County of San Bernardino in 2005. This figure represents approximately 4% of the County’s total income. Riverside County contributed another \$166 million in income related to the production of international merchandise.

As mentioned throughout this report, the San Bernardino region is in a unique position to benefit from both export and import activity. Because a majority of the international merchandise transitions through the San Bernardino region, employment is generated regardless of whether local firms are importing or exporting. For instance, local wholesalers often benefit from all kinds of trade activity; in essence, whether goods are received as imports or shipped out as exports, wholesalers profit from the transaction. Likewise, the area’s retail industry is able to import low-cost textile goods and apparel accessories. Low-cost imports allow local retail establishments to reduce costs and increase profitability. In short, given the San Bernardino region’s industrial structure, imports are likely to drive, as opposed to inhibit, job creation and economic development (Baughman and Frangais 2005; Campa and Goldberg 1997). In contrast to the San Bernardino region, other regions in the U.S. are often negatively impacted by increased foreign competition. The classic example is the Detroit area’s car manufacturing industry, which faced a severe recession at the hands of foreign competition (Griswald 2006).

Table V-3: Trade Employment in Top Cities

City	Imports	Exports	Total
Ontario	20,597	767	21,364
Fontana	7,741	793	8,534
Chino	7,314	439	7,753
Rancho Cucamonga	4,357	31	4,387
Corona	1,711	138	1,849
% of Total Trade-Related Employment			87%

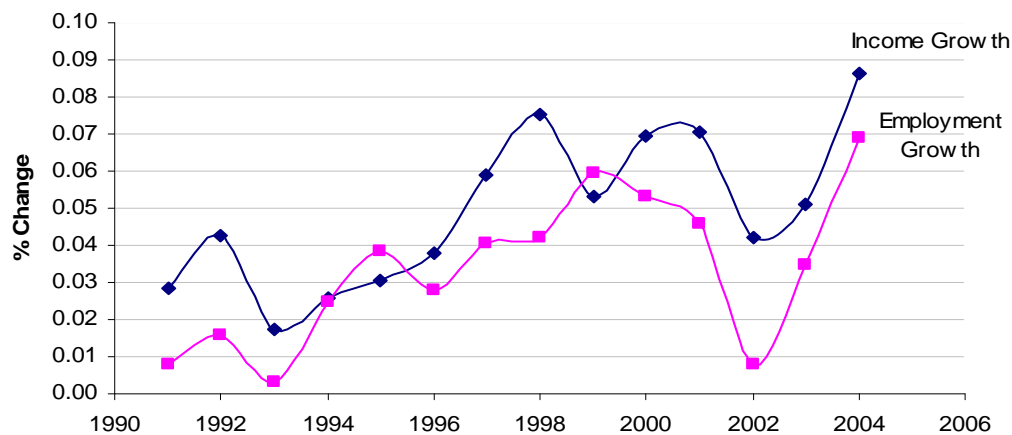
Note: Estimates Calculated by the California Policy Institute at Claremont (CPIC)

International trade is critical to the economic viability of certain local industries. According to data from the California EDD, international trade was responsible for approximately 38% of all employment in the wholesale trade industry and 25% of all employment in the retail trade industry in San Bernardino County. While the retail industry provides relatively lower wages when compared to other industries, the wholesale industry pays an average salary of close to \$44,000. With this wage level and the relatively low education levels necessary to carry out wholesale trade, growth in this industry may provide upward mobility for a consider number of “blue collar” workers (for a similar argument, see Husing 2005).

5.3 TRADE, EMPLOYMENT, AND ECONOMIC DEVELOPMENT

The employment figures given in this report also provide a good picture of regional economic development and growth. In San Bernardino County, employment growth and economic development (measured as income growth) display the usual positive relationship—i.e., when employment is high, income tends to be high and vice versa. From the employment calculations in this report, it is clear that international trade is contributing to employment growth in the San Bernardino region. Having established this relationship, CPIC feels confident in positing a relationship between employment in sectors associated with international trade and overall economic development of the region.

Figure V-3: Employment and Income Growth for San Bernardino County



Source: California Employment Development Department; U.S. Bureau of Economic Analysis

CPIC’s analysis of the data from PIERS indicates that the number of jobs associated with international trade is significant. In addition, we see positive growth trends in overall international trade, in both imports and exports. These two findings, when coupled, indicate the strong potential for an upward trend in employment in sectors associated with international trade. As this report has outlined, many of the jobs associated with international trade pay high wages and have few formal education requirements. The accumulation of this data suggests that international trade has the potential to have long-term and beneficial effects on the economic development of the San Bernardino region. Furthermore, literature on economic development, job creation, and business attrac-

tion suggests that a cluster of businesses engaged in international trade, along with the relatively unique advantages of the area, will provide leverage for the area when bargaining with businesses (Held 2005; Porter 2000; Steinacker 2002).

It is important to make clear that the industries related to international trade should not be the sole focus of economic development resources. The San Bernardino region has suffered of late from the fall of domestic manufacturing. This was largely due to an over-concentration of labor in a single sector of the market and a general lack of education in the population that worked in the manufacturing sector. The area should be cautious to avoid a similar trap by investing all its economic development resources in a single industrial sector. International trade is no exception. However, the relative diversity of employment sectors associated with international trade provides some relief from the possibility of a repeat of the decline of manufacturing (see Table V-1 on page V-1). Despite this diversity, the area is not completely insulated. If a major event was to stall trade from Asia, the San Bernardino region would feel an immediate and long-lasting impact, with possible devastating effects on the economy of the area.

5.4 CONCLUSION

The San Bernardino region has advantages that few other areas of the world possess. A prime location, relative closeness to the Ports of Los Angeles and Long Beach, separation from much of the congestion of the Los Angeles area, access to a logistics and infrastructure nexus (including interstates, rail, and airports), a growing population, and a strong base in industries that support international trade provides the San Bernardino region with a competitive advantage. This report has shown that international trade flows currently provide an important component of the regional economy, while the relative importance of trade flows is likely to increase well into the future. There are few other areas so poised to support this growing international trade activity.

In addition to providing a statistical overview, this report has shown that international trade contributes to regional employment and economic development. Not only does trade contribute directly to regional income by providing jobs, it provides tangible benefits when a city or county in the area is bargaining to attract a business, as businesses dependent on trade have few other location options (Steinacker 2002).

Ensuring that the region's potential for international trade activity is realized will not be easy. Public officials and local businesses must work together to secure resources to ensure that the region's transportation infrastructure keeps pace with trade growth. Several proposals have already been put forth to address local infrastructure needs (SCAG 2005). It is critical to the viability of the San Bernardino region's international trade industries that these policies are carried out. Despite these challenges, the San Bernardino region is in the position to become a critical gateway between Asia, the South Pacific, and the continental U.S.

5.5 ENDNOTES

¹ For a good overview on how PIERS collects its data (as well as other data sources available to study international trade at the sub-national level), see Thomas J. Heidt (2002), “Port Statistics: Fact or Fiction,” The American Association of Port Authorities.

² According to a Senior Programmer Analyst at PIERS, the estimated value calculation is provided by using the following methodology:

“PIERS builds a reference table that incorporates the U.S. Maritime Administration Waterbourne Databanks values. The reference table is summarized by U.S. coast, country & HSCODE. There are separate tables for export & import transactions. The value is generated by dividing the VALUE by the WEIGHT in the table for each U.S. coast, country & HSCODE combination to obtain a value per ton factor. That factor is then applied to the PIERS database for each U.S. coast, country & HSCODE combination to derive an estimated cargo value for each PIERS transaction.”

³ Data are in 2005 constant dollars based on the Import Price Indexes (MPI) and the Export Price Indexes (XPI) published by the U.S. Bureau of Labor Statistics. <http://www.bls.gov/mxp>

⁴ While other studies examine years prior to and after 2002, in the opinion of CPIC, this could lead to invalid comparisons. To avoid making invalid inferences, CPIC avoids making such comparisons.

⁵ In fact, based on information from the Port of Long Beach (see Port of Long Beach 2005), Inland trade hit its lowest point at approximately the same time as congestion was reaching its peak—the fourth quarter of 2004.

⁶ Commodity classification is based on 2-digit Harmonized System (HS) codes. HS codes are published by the U.S. International Trade Commission and are one of two primary coding systems used to classify international commodities. For more information on HS codes, see *Harmonized Tariff Schedule of the United States*. International Trade Commission. September 1, 2006. <http://www.usitc.gov/tata/index.htm>

⁷ For more information the methodology used to derive these estimates, see Annex 1 on page VT-1.

ANNEX 1: Extended Explanation of Methodology

Estimated Value

The primary data source used to analyze international trade in San Bernardino and Riverside Counties is the Port Import Export Reporting Service (PIERS). PIERS collects data from over 90,000 bills of lading daily, making the data available for purchase. The company provides detailed statistical information on the tonnage and estimated value of the international transaction. According to PIERS, the estimated value calculation is provided by using the following methodology:

“PIERS builds a reference table that incorporates the U.S. Maritime Administration Waterborne Databanks values. The reference table is summarized by U.S. coast, country & HSCODE. There are separate tables for export & import transactions. The value is generated by dividing the VALUE by the WEIGHT in the table for each U.S. coast, country & HSCODE [Harmonized System Code] combination to obtain *a value per ton factor*. That factor is then applied to the PIERS database for each U.S. coast, country & HSCODE combination to derive an estimated cargo value for each PIERS transaction” (PIERS 2005).

PIERS provides detailed data on the estimated value of international merchandise trade by local zip code. Specifically, the PIERS data tracks the imports and exports of companies conducting vessel trade in a particular geographic region. In order to reach figures for each city in this report, CPIC summed trade activity across zip code. Likewise, to get county level trade activity, CPIC summed all of the zip codes included in both San Bernardino and Riverside Counties.

As mentioned throughout this study, the PIERS data underestimates the impact of trade from other modes of trade activity because it only includes vessel trade. To provide an accurate—yet conservative—estimate of overall trade activity in the region, CPIC calibrated estimates based on transportation modal ratios derived from Bureau of Transportation statistics (BTS) data on air, truck and rail movements. The estimates are derived from BTS data for the U.S. over the period 2000 to 2005. Using data from multiple years allowed CPIC to capture the changing composition of modal goods movement over time. Using the PIERS vessel trade data as a baseline, CPIC used the BTS ratios to estimate the likely contribution of air, truck, and rail movements based on U.S. averages. Basically, the ratios are used as multipliers to increase the level of trade activity to represent all modes of transportation and thus provide a more accurate representation of the overall regional trade level.

Employment Estimates

In order to generate employment estimates from international trade activity, one must calculate the transportation, wholesale, retail, and manufacturing margins associated with a particular import or export. Essentially, trade and transportation margins are derived from the ratio of gross profit to sales revenue. Data on the gross margins associated with a particular industry is available from the U.S. Census Bureau. After generating these margins, CPIC combines the PIERS data and gross margins to calculate the value added or markup associated with a commodity.

It is important to point out that the U.S. Census industry-level data is based on NAICS codes and thus CPIC recoded the PIERS data from HS code to fit the Census data. For instance, if the PIERS data reports an imported commodity such as “articles of plastic” (HS code 3296), CPIC would recode that entry to “plastic materials wholesalers” (included in NAICS code 4246). Unfortunately, the recoding process presents a source of potential error. To reduce potential error, however, the data recoding process was conducted by two separate researchers and statistical analysis was conducted on the findings. The statistical analysis showed a high level of inner coder reliability (with a correlation coefficient above .9).

After the value added calculations are completed, one must estimate the employment associated with these values for specific industries. To complete this objective, CPIC used the “Employment Requirement Matrix” created by the Bureau of Labor Statistics. The matrix is based on combining historic input-output tables generated by the Bureau of Economic Analysis (BEA) and productivity factors from the BLS Current Employment Survey. Input-output tables provide a “snap shot” of all production in the U.S. for a given point of time, while also providing the historic relationships between industries for given regions (BEA 1997). After identifying inter-industry relationships using the input-output table, BLS economists combine the BEA estimates with employment data to create the “Employment Requirements Matrix” (Chentrans 2005).

The Employment Requirements Matrix allows CPIC to calculate the employment supported by \$1 million of trade-related value added in a given industry. For instance, if international trade generates \$1 million dollars in the wholesale sector (NAICS 42), the matrix estimates that the million dollars would create approximately 9 employees spread over 200 industries. Specifically, the matrix coefficients suggest that, on average, a \$1 million dollar increase in the wholesale industry leads to 9 additional jobs.

Formally, the following 3 equations are utilized to get the total employment associated with international trade in the two-county region:

$$y_i \equiv (V_i * T_i)M_i \quad \text{Equation (1)}$$

Where,

y_i : Vector of value added calculations

z_i : Refers to the specific import or export industry being analyzed. These data come directly from PIERS.

V_i : Vector of values (i.e., imports or exports) from the PIERS data

T_i : Vector of transportation and trade margins associated with industry i

M_i : Vector of gross margins associated with industry i

$$e_i = \sum_{j=1}^n \alpha_{i,j} y_i$$

Equation (2)

Where,

e_i : Employment generated by industry i

j : Refers to the industries that are impacted by international trade. These data come from the BLS Employment Requirement Matrix

n : The number of industries captured in Employment Requirement Matrix

$\alpha_{i,j}$: Matrix of BLS Employment Requirement Coefficients associated with industry i and j .

$$e = \sum_{i=1}^N \sum_{j=1}^n \alpha_{i,j} y_i$$

Equation (3)

Where,

e : Total employment generated by international trade (either imports or exports) in the San Bernardino region.

N : The number of industries conducting international trade activity in the San Bernardino region.

Equation 3 gives us the total employment generated by all industries participating in international trade in the San Bernardino region. The same set of equations is used to derive individual estimates for San Bernardino County, as well as Inland cities.

While the BLS Employment Requirement Matrix is used frequently by economist, policy makers and academics, it is important to recognize the assumptions underlying the construction of the matrix. First, the matrix's productivity measures are based on 2004 technology—the latest year for which data exists—and assume stability over time. This assumption, however, does little to effect the estimates in this study, as stability between 2004 and 2005 is an appropriate assumption. Second, the ratios represented in the matrix are average relationships and may not hold when an area or set of data moves above or below the mean point. Third, the matrix does not include the impact of multiplier effects. The coefficients show the impacts of all the purchases of inputs for production, but fail to include the impact of spending for consumer goods by those individuals earning income from producing goods. For more information on the assumptions used to construct the Employment Requirements Matrix, see Chentrans (2005).

ANNEX 2: ACRONYM INDEX

Alameda Corridor Transportation Authority: ACTA
California Employment Development Department: EDD
California Policy Institute at Claremont Graduate University: CPIC
Harmonized System Code: HS
International Monetary Fund: IMF
Los Angeles World Airports: LAWA
Los Angeles International Airport: LAX
North American Industrial Classification System: NAICS
Ontario International Airport: ONT
Pacific Maritime Association: PMA
Political Risk Services: PRS
Port Import Export Reporting Services: PIERS
San Pedro Bay Ports: the Ports of Los Angeles and Long Beach
San Bernardino Region: San Bernardino County and select cities in Riverside County
Southern California Association of Governments: SCAG
U.S. Bureau of Transportation Statistics: BTS
U.S. Bureau of Labor Statistics: BLS
U.S. Trade Representative: USTR
United Postal Service: UPS
World Trade Organization: WTO

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ANNEX 4: STATEMENT OF ASSUMPTIONS AND LIMITING CONDITIONS

This report is made with the following assumptions and limiting conditions:

Economic and Social Trends - The consultant assumes no responsibility for economic, physical or demographic factors which may affect or alter the opinions in this report if said economic, physical or demographic factors were not present as of the date of the letter of transmittal accompanying this report. The consultant is not obligated to predict future political, economic or social trends.

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Definitions and Assumptions - The definitions and assumptions upon which our analyses, opinions and conclusions are based are set forth in appropriate sections of this report and are to be part of these general assumptions as if included here in their entirety.

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Legal Expenses - Any legal expenses incurred in defending or representing ourselves concerning this assignment will be the responsibility of the client.